

PROCEEDINGS  
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A NEW CHAETANAPHOTHRIPS FROM FORMOSA,  
WITH A NOTE ON THE BANANA THRIPS

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The vector of banana rust has consistently been called *Scirtothrips* (or *Anaphothrips*) *signipennis*, but unfortunately the species belongs to neither of these genera and furthermore has an older specific name. While pointing out these facts below, it has seemed best to clarify our knowledge further by differentiating a new Formosan species with which it has been confused in the literature.

*Chaetanaphothrips machili*, sp. nov. (Figs. 1 and 2)

1928. *Anaphothrips* (*Chaetanaphothrips*) *orchidi* (sic) [misidentification], Moulton, Annot. Zool. Jap., 11:291.

1936. *Anaphothrips orchidii* [misidentification], Takahashi, Phil. Journ. Sci., 60(4) :430.

Very closely allied to *orchidii*, but orange (rather than lemon-yellow) in color, with antennal segments VII and VIII shorter and stouter (Figs. 1 and 3), ovipositor shorter (199-211  $\mu$ , in comparison with 238-266  $\mu$ ), setae on abdominal tergum IX stouter (I about 5  $\mu$  in diameter near base, instead of about 4), X with distinct anastomosing longitudinal striae, and nymph of Instar II with long, prominent teeth on posterior margin of abdominal tergum IX (Figs. 2 and 4); pupates on host plant, instead of in soil.

♀ (macropterous).—Color bright orange, deeper in pterothorax, more yellowish in abdomen, this color due to internal pigmentation; legs yellow; fore wings dark blackish gray in basal fifth and in third and fourth fifths, remainder nearly colorless, the demarcation of the pale apical band not sharp; antennae yellow in segments I-IV and in basal two-thirds of V and basal half of VI, remainder dark gray, II with internal orange pigmentation, IV very obscurely shaded apically. Length about 0.9 mm. Head about 98  $\mu$  long, width across eyes 144, just behind eyes 131, across cheeks 135, near base 130, cheeks narrowed somewhat more abruptly to eyes than to base, occiput with three strong cross-striae which produce a serration of cheeks, remainder of dorsal surface nearly smooth; two pairs of minute setae across front about on line with anterior margin of median ocellus, another similar interocellar pair about as far apart as posterior ocelli and on a line with anterior margin of latter, three pairs close to inner angles of eyes, and three larger pairs (14  $\mu$ ), one of these last behind outer angles of eyes, the other two on cheeks and a little farther forward, one below the other; eyes 67  $\mu$ , width 44, interval 57, sparsely and very briefly pilose; ocelli

16-17  $\mu$  in diameter, posterior pair about 21 apart; mouth-cone rounded at tip and extending 74-80  $\mu$  beyond dorsal margin of head, maxillary palpi 3-segmented; antennae normal, sense-cone on III and IV U-shaped, long, extending to or beyond setae on following segment, I 23(30), II 33(25), III 47(19), IV 44(19), V 41(19), VI 49(16), VII 11(7), VIII 17(5). Pronotum 116  $\mu$  long, width 176, surface smooth except for a few faint striae along anterior and posterior margins; third seta from median line on posterior margin about 27  $\mu$ , fifth about 15, other prothoracic setae smaller and few in number, all pale; pterothorax normal, greatest width 234  $\mu$ ; fore wings typical, 630  $\mu$  long, costal margin with about 19 pale setae, fore vein usually with 1 + 3 + 3 in basal half or less and 1 + 1 + 1 beyond, hind vein with about 4 widely-separated similar ones. Abdomen normal, 255  $\mu$  wide at segment IV; X with distinct anastomosing longitudinal striae; setae on IX stout, I 84  $\mu$  long and about 5 in diameter near base, II 85, III 99; I on X 81, II 70.

*Nymph, Instar II.*—Integument pale, underlain in head, thorax, and first nine abdominal segments with orange and red pigmentation, the latter confined to sides of thorax and abdomen and more abundant in latter; antennal segment I 20(31), II 23(22), III 37(23), IV 44(21), V 8(16-17), VI 12(12), VII 23(7); tergum IX of abdomen (Fig. 2) strongly toothed along elevated posterior margin, three or four of the teeth median and arising from a distinct prominence, the others at sides, all variable in form.

*Pupa.*—Color as in nymph; tergum VIII with posterior margin elevated to form a transverse hump whose overhanging hind margin is minutely denticulate; posterior margin of X with four diverging, equidistant, strong, horn-like teeth (the median two slightly heavier) which arch upward and a little forward, the longer median pair about 47  $\mu$  long.

*Type.*—FORMOSA: Chikushiko, August 18, 1935, 8 ♀♀ (including holotype), 4 nymphs of Instar II, and 2 pupae, from *Machilus* leaf. In his paper cited above, Mr. Takahashi notes that this species "is not found on orchids,"—a statement which he entered also on his slide labels. He states that leaves of young trees of *Machilus* are attacked, and that the leaves become rolled along the margin, with the lower surface in. Because the pupae were mounted by him on the same slides with nymphs and adults, with the above data on the labels, it is obvious that the species pupates without leaving the leaves.

*Chaetanaphothrips orchidii* (Moulton) (Figs. 3 and 4).

The Banana Thrips

1907. *Euthrips orchidii* Moulton. Tech. Ser. 12, Bur. Ent., U. S. Dept. Agr., Pt. III, p. 52, Figs. 15-18.
- \*1914. *Scirtothrips signipennis* Bagnall, Ann. Mag. Nat. Hist., (8) 13: 22.
- \*1924. *Euthrips biguttaticorpus* Girault, in Lèse Majestè, New Insecta, and Robbery (privately printed), Gympie, Australia.
- \*1925. *Euthrips biguttaticorpus* Girault ["new species"], Ins. Insc. Menstr., 13(1-3) :34.
- \*..... *Euthrips musae* Tryon, MS. (nomen nudum).

\*New synonymy.

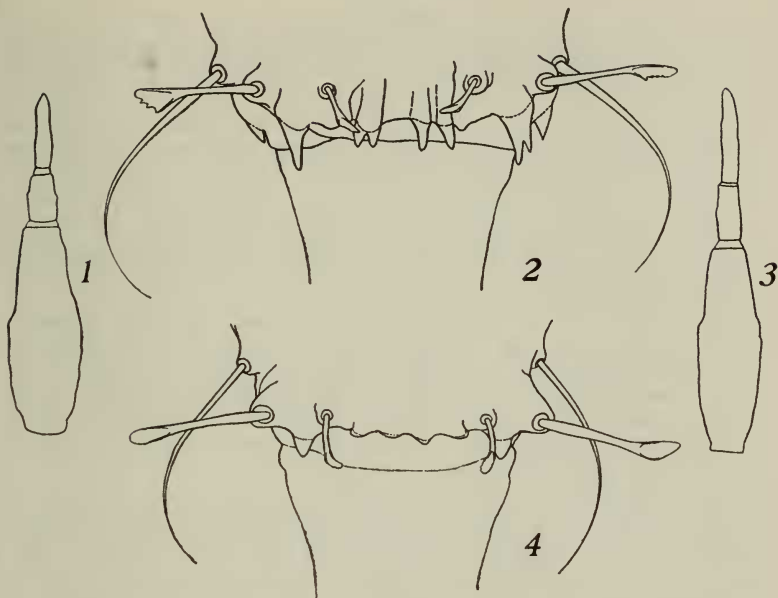


Fig. 1.—*Chaetanaphothrips machili*, sp. nov., segments VI-VIII of right antenna; ♀, paratype; x 430.

Fig. 2.—*C. machili*, tergum IX and base of X; nymph, Instar II; paratype; x 430.

Fig. 3.—*C. orchidii* (Moulton), segments VI-VIII of right antenna; ♀, paratype of *Euthrips biguttaticorpus* Girault, from Queensland; x 430.

Fig. 4.—*C. orchidii*, tergum IX and base of X; nymph, Instar II, collected with the paratype referred to immediately above; x 430.

It is unfortunate that the name of the banana thrips must be changed from *Scirtothrips signipennis*, or *Anaphothrips signipennis*, to *Chaetanaphothrips orchidii*—especially as the latter specific name is both inappropriate and incorrectly formed. However, there can be little doubt that the two names are synonymous. Through the kindness of Dr. Edward S. Ross, of the California Academy of Sciences, where the Moulton collection is deposited, I have been able to study the two "types" of *orchidii* still remaining in the collection, and to compare them with specimens of Girault's type series of *Euthrips biguttaticorpus*, described from bananas in Queensland. The unique type of *Scirtothrips signipennis* Bagnall is unfortunately unavailable for study, because deposited in the British Museum; but that name was based upon a specimen from banana, taken in Ceylon, and the description applies perfectly to *orchidii*. Other workers on the group have similarly been convinced that the name *signipennis* is applicable to the present species, and have used that name consistently for all material taken from banana, in Australia and elsewhere.

An element of confusion exists, though, because Bagnall used the name *orchidii* as early as 1908, for specimens taken in greenhouses in England, Belgium, and France (I have material from all three countries, sent by him in 1908 and 1936), and yet himself proposed the name *Scirtothrips signipennis* in 1914. Were the species not so distinctive in color, one would be justified in thinking that two species, instead of one, might be involved. But Dr. H. Priesner has independently identified, as *Chaetanaphothrips orchidii*, a Brazilian specimen which I sent to him, and in a letter dated April 20, 1954, tells me that he has a note in his index which reads as follows: "A slide from Girault under this name (*Sc. signipennis*) is identical with *Chaetanaphothrips orchidii* (Moulton)."

The species is well distributed. I have specimens from Australia, Fiji, Panamá, Trinidad, Brazil, Honduras, Costa Rica, and Florida—all taken out-of-doors and from a varied assortment of plants, but never from orchids—as well as the specimens from greenhouses in England, Belgium, and France, referred to above. Excepting for the records of the species from Formosa, most of the other records are probably based upon correctly determined material.

Two structurally different forms of the species exist: (1) a somewhat larger form, with a pair of minute setae closely flanking the median ocellus and with a glandular area near the base of the third, and sometimes the fourth, abdominal sternum; and (2) a parthenogenetic form which is somewhat smaller and which lacks the structures mentioned. The first form is always accompanied by males and is presumably diploid, while the second is found only when males are wanting and is therefore probably haploid. Both forms are found on banana.

Moulton's types are of the parthenogenetic form; and as no selection of holotype was made by him, I am designating one of them as the LECTOTYPE, at Dr. Ross's suggestion, and am so labeling it.

It is interesting that the species occurs only rarely on orchids out-of-doors, though reportedly injurious to them in greenhouses, and that, unlike *machili*, described above, it pupates in the soil, both in Australia and the tropics of the New World.